



Original communication

Awareness and practice of road safety measures among undergraduate medical students in a South Indian state

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ABSTRACT

The UN general assembly has declared 2011–2020 as the "Decade of Action for Road Safety". The declaration holds significance because road traffic accidents (RTAs) have become a major cause of morbidity and mortality, especially among the adults and middle aged individuals who constitute economically most productive age groups of society. The importance of knowledge and practice of road safety measures needs to be emphasized in the prevention of RTAs. The present study is aimed to assess the knowledge and practice of road safety measures among the students of a medical college in coastal, South India. A total of 260 medical students were included in this cross-sectional study. A semi-structured questionnaire was used to collect the relevant information from the participants. The data collected was analyzed using SPSS version 11.5. Out of the 260 participants, 149 (57.3%) were females and 111 (42.7%) were males. The overall awareness on road safety measures was slightly higher among females (20.6%) than males (19.9%). The participants had significantly low awareness with regard to alcohol and driving (4.2%), use of seat belts (20%) and use of mobile phones without hands free device (6.1%). The participants had a better knowledge about traffic signs and more than half of them identified all the signs correctly. With regard to the road safety practices, 25% were involved in drunken driving in the past one year. The practice of using mobile phones with hands free devices while driving was admitted by 20% of them. Nearly two-third participants (68%) admitted to have crossed speed limits on multiple occasions. Observations of the study emphasize on the need to generate awareness among medical students through training and IEC activities to curb the epidemic of RTAs.

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1. Introduction

Road traffic accidents (RTAs) are considered as one of the important public health problems around the world. According to Global Status Report on Road Safety-2009, over 1.2 million people die each year on the roads worldwide and between 20 and 50 million suffer non-fatal injuries. Currently, road traffic accidents are the 9th leading cause of death and are predicted to become the 5th leading cause of death by the year 2020.¹ The problem of RTAs is compounded by the fact that, the age groups primarily involved in RTAs belong to the most productive age group of 15–40 years.^{2,3} Developing countries, such as India face the double burden of

already existent communicable diseases and increasing burden of non-communicable diseases including RTAs. In the South East Asian region of the WHO (WHO-SEARO), India alone accounted for 73% of RTA burden.⁴ According to a report published by Ministry of Road Transport and Highways, 56 accidents occur every hour on Indian roads and at least 14 people are killed in these accidents.⁵ Prevention of RTAs thus, becomes very crucial in order to improve the longevity and the quality of life of the individuals concerned. A few studies from the region have highlighted the problem status of road traffic fatalities in this part of the country.^{6–9} Simple measures such as awareness and practice of road safety measures can effectively reduce the impact of RTAs on the people's lives. The search for studies in relation to road safety measures among young adults yielded few studies across India and abroad.^{10–15} The present study is aimed to assess the awareness

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levels and practice of road safety measures among medical students in a coastal city of a south Indian state.

2. Materials and methods

The present cross-sectional study was conducted among medical students in Mangalore, India. The city of Mangalore is the headquarters of Dakshina Kannada district, situated in the western coast of the Karnataka state in South India. The city caters to a large population of medical students studying in various medical colleges. Ethical clearance was obtained from the Institutional Ethics Committee of Kasturba Medical College, Mangalore before the commencement of the study. A sample size of 260 was calculated, assuming the awareness level among medical students as 50%, a relative precision of 6% and a confidence level of 95%. The participants were selected using convenient sampling technique. The study participants included in the study were undergraduate medical students from 4th to 9th semesters. A pre-tested, semi-structured questionnaire was administered to the students after obtaining written informed consent. The questionnaire had two parts, the first part included the general information related to the participants and the second part contained the questions related to awareness and practice of road safety measures. The information collected was analyzed using SPSS version 11.5. The association between variables included in the study was tested using Chi-square test.

3. Results

A total of 260 participants were included in the study. Among them 149 (57.3%) were females and 111 (42.7%) were males. Most of the study participants ($n = 86$, 33%) used two wheelers, followed by those who used four wheelers ($n = 75$, 29%). A few participants used both two wheelers and four wheelers ($n =$, 20.4%), while the remaining participants used public transport services ($n = 46$, 17.6%).

The study participants' awareness regarding road safety measures is observed to be considerably low (Table 1). Overall, females had a marginally higher awareness levels (20.6%) than males (19.9%). It is observed that for most aspects of road safety measures, there were differences in awareness levels among males and females. The knowledge levels were considerably lower among the study participants regarding certain important issues such as alcohol and driving [$n = 11$ (4.2%), $p = 0.02$], use of right hand lane while overtaking a vehicle [$n = 26$ (10%), $p = 0.03$] and safe method to use mobile phones with hands free devices while driving [$n = 16$ (6.1%), $p = 0.01$].

The study population had a better awareness about the traffic signs as is evident in Table 2. The awareness regarding traffic sign was found to be higher among males (52.5%) than females (50.6%).

However, the gender differences in awareness regarding traffic signs were not statistically significant.

The practice of road safety measures was assessed among the vehicle user subgroup of study participants ($n = 214$). Among them, nearly one-fourth of participants ($n = 54$) were involved in drunken driving in the past one year. Forty-four participants admitted to the practice of using mobile phones without hands free devices while driving. Most of the participants ($n = 146$) admitted to have crossed speed limits on multiple occasions. Safe practices such as regular maintenance of vehicles were followed by a good number (78.9%) of participants (Table 3).

4. Discussion

The present study was conducted to assess the awareness and practice of road safety measures among medical students. More than half of the participants included in the study were females. In the present study more than 3/4th of study participants used their own vehicles (two wheelers and four wheelers) compared to those who used public transport. Similar findings were observed in a study conducted by Al-Khalidi in Saudi Arabia where nearly 70% participants used their own vehicles.¹¹ The high vehicle usage rate among the study participants can be explained by the fact that most of them belonged to families with higher socio-economic status who can afford vehicles. Even though the study participants have access to a very convenient transport facilities provided by the institution as well as public transport, they resorted to use of personal vehicles. In order to reduce the environmental pollution and save environment, the students should be encouraged to use either public transport or the transport facilities provided by the institutions.







The overall knowledge of road safety measures was marginally higher among females than males. Our finding is similar to the observation in the study conducted by Swamy et al. in Chandigarh.¹³ However, in another study conducted by Raj et al. the knowledge levels were higher among males.¹² This gender difference in awareness might be attributed to the study settings; the present study and the one conducted by Swamy et al.¹³ mainly included urban population while the one conducted by Raj et al.¹² mainly included participants from rural background. Better exposure to media sources and day-to-day exposure to traffic in cities might be the reasons for the better performance of females in our study. However, when sub-topic exploration is done, the participants significantly lacked knowledge in relation to certain important risk factors while driving. Only a few students were aware of the dangers of drunken driving. Furthermore, knowledge regarding use of seat belts was low among the participants. Similar observations are made in other studies from Malaysia and Aseer region.^{10,11} Use of seatbelts is one of the most cost effective way to prevent RTA related morbidity and mortality.^{16,17} The participants' poor knowledge regarding the use of seatbelts raises concern and should be

Table 1

Knowledge levels among participants (who responded in affirmative) regarding road safety measures ($n = 260$) and male–female differences in the knowledge levels.

S. No.	Road safety measures	Total (%)	Males (%)	Females (%)	p-Value
1	Driving after consuming alcohol is dangerous	11 (4.2)	8 (7.2)	3 (2.0)	0.02
2	Cautious driving near schools	145 (55.8)	66 (59.5)	79 (53.0)	0.21
3	Safe time to read maps is when your vehicle is parked	12 (4.6)	6 (5.4)	6 (4.0)	0.29
4	Seat belts should be worn by everyone in the car	53 (20.4)	18 (16.2)	35 (23.5)	0.88
5	Loud music in the car can distract the driver	30 (11.5)	15 (13.5)	15 (10.0)	0.68
6	One should drive in the left lane	74 (28.5)	36 (32.4)	38 (25.5)	0.11
7	One should overtake from the right hand lane only	26 (10.0)	5 (4.5)	21 (14.0)	0.03
8	One should pull over when it is safe to give way to an ambulance with a flashing light	92 (35.4)	45 (40.5)	47 (31.5)	0.07
9	Safest way to use mobile phone while driving is use of hands free devices	16 (6.1)	1 (0.9)	15 (10.0)	0.01
10	One should wait patiently if pedestrians are taking too much time at the zebra crossing	20 (7.7)	5 (4.5)	15 (10.0)	0.23
11	Correct knowledge about speed limits is essential	103 (39.6)	39 (35.1)	64 (43.0)	0.02

Table 2Awareness among study participants regarding road traffic signs ($n = 260$) and male–female differences in the aware population.

S. No.	Traffic sign	Interpretation of sign	Total (%)	Males (%)	Females (%)	<i>p</i> -Value
1		No stopping	85 (32.7)	35 (31.5)	50 (33.5)	0.78
2		Stop before proceeding	127 (48.8)	54 (48.6)	73 (48.9)	0.73
3		No U-turn	219 (84.2)	93 (83.8)	126 (84.6)	0.96
4		Dangerous dip	47 (18.1)	21 (18.9)	26 (17.4)	0.76
5		Give way	109 (41.9)	54 (48.6)	55 (36.9)	0.16
6		Cycles prohibited	216 (83.1)	93 (83.8)	123 (82.5)	0.96

addressed through proper awareness generation programs. The knowledge regarding safe use of mobile phones while driving on roads also appeared to be low among the study participants. Use of mobile phones without hands free devices while driving is a well-known risk factor for RTA related fatalities.^{18,19} Efforts are on to increase the awareness on safe use of mobile phones through signboards urging road users to avoid mobile usage while driving in this part of the country. Nearly half of the study participants identified traffic signs showed to them correctly. Awareness with regard to the traffic signs though better than the awareness of road safety measures is still much less than the expected satisfactory levels. Similar findings were observed by Gharaibeh et al. in a study conducted in Saudi Arabia.¹⁵ The better knowledge of traffic signs among study participants may be due to the increased day-to-day exposure to these signboards while travelling.

Regarding the practice of road safety measures, nearly 1/4th of the study participants were involved in drunken driving during the past year. Such high risk taking behavior among the study participants is alarming. Alcohol and driving is a well-known notorious combination responsible for an increased morbidity and mortality associated with RTAs. Nearly 1/5th of the participants admitted to the use of mobile phones without hands free devices while driving. Furthermore, nearly two-third participants agreed to having

exceeded speed limits while driving. These findings are similar to a study conducted by Gharaibeh et al. in Saudi Arabia.¹⁵ The behaviors concerning mobile usage and over-speeding while driving are not only dangerous to the driver but also to others. Hence, these behavior patterns need to be addressed through proper legislative and educative measures. It was observed that nearly half of the participants always followed traffic rules and more than two-third had got their vehicles serviced regularly. Old and badly maintained vehicles are among the important reasons for increasing road traffic fatalities in developing countries like India.²⁰ Practices relating to road safety should be encouraged to curtail the morbidity and mortality related to RTAs.

The present study is an attempt to include most of the important aspects of road safety measures. The limitations of our study include lack of coverage of some important aspects and practices such as use of helmets, awareness regarding driving license and proportion of participants possessing driving license, practice of wearing seat belts, etc. Nonetheless, the present study throws light on important issues with regards to safe driving and road safety such as practice of drunken driving which was hitherto unexplored in previous studies and also other issues like the use of mobile phones without hands free devices and over-speeding while driving.

5. Conclusion

In our effort to curb the epidemic of road traffic accidents, undertaking proper road safety measures are the best available interventions. The overall awareness and practice of road safety measures was low among the study participants. Medical students are considered as an asset to a community and the services they ought to provide include not only clinical but also educating the community about practices that can improve the health and lives of

Table 3Practices of vehicle users ($n = 214$) included in the study.

	Practices of participants	Yes (%)	No (%)
1	Drunken driving	54 (25.2)	160 (74.8)
2	Use of mobile phone while driving	44 (20.5)	170 (79.5)
3	Exceeding speed limits while driving	146 (68.2)	68 (31.8)
4	Regular maintenance of vehicle	169 (78.9)	45 (21.1)
5	Playing music while driving	75 (35.0)	139 (65.0)

people. Awareness generation and orientation towards road safety issues among the medical students should be done through periodic trainings. The efforts for increasing road safety measures through signboards, posters and mass media should be strengthened to reduce the morbidity and mortality in relation to road traffic accidents. Further research in this area needs to be conducted to assess the existing situation regarding road safety measures across various sub-groups of populations.

Conflict of interest

The authors declare that they have no conflict of interest.

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Ethical approval

An approval was obtained from the Institutional Ethics Committee of Kasturba Medical College, Mangalore (affiliated to Manipal University) before taking up the research work.

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